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Measurement and Evaluation of the Financial Performance through the Balanced Scorecard (BSC) Of Food Industry in Yemen

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1. INTRODUCTION

Over the past decades, the complex global business environment and increasing business competitiveness have highlighted the importance of performance measurement. Methods of measuring and evaluating performance have been widely adopted in many industrial sectors, and are receiving more and more attention. Due to the recent pressures attributed to the technological and competitive changes that all sectors face, performance metrics and measurement remain crucial for tracking, managing and improving the competitive performance of organizations. In this context, understanding the scope, frequency and relevance of the various performance measures available to executives is essential for the process of integrating the different dimensions of organizational performance.

The tremendous technological development in the means of production made the unit cost of production, which was very reliable in competition an element that no longer occupied the first place in the competitive advantages. In contrast, technological innovation and commitment to social responsibility and work ethics, and the high quality, occupy advanced ranks in the competitive pillars adopted by the industrial or service enterprise to penetrate the markets and increase its market share (Fathiah, 2014). These matters require special procedures for companies to know their actual position in the market. Therefore, researchers focused their studies remarkably in the eighties and nineties on the development of various measures to evaluate the performance of companies according to non-financial dimensions, so that they are combined with financial standards and reach a suitable measure that is more comprehensive and effective.

Perhaps one of the most important efforts made in this field is the development of the Balanced Scorecard system by researchers (Kaplan / Norton). Since the announcement of the development of this system and its first appearance in 1992 in Harvard Business Review to this day, many studies, research and many practical applications of this balanced model have been carried out in many industrial, service, banking and financial institutions. The balanced scorecard as a performance appraisal tool was of great importance to corporate managers, due to its ability to identify the efficiency and effectiveness of companies, show weaknesses and deficiencies and work to correct them, and extract the necessary solutions (Hamed, 2009). This enhances the performance and development of companies, increases their ability to compete, and ensures their survival and continuity. The application of this model in companies has become a basis for planning, control and financial decision-making. However, its use requires a broad base of information and data, then work on studying, interpreting and analyzing it through the main dimensions of the balanced scorecard to evaluate the company's financial performance in the past and present, and identifying ways to improve it in the future (Lauras, 2004).

Among the fatal mistakes that companies commit these days, which often lead to losing their market share, and leaving them out of the ranks of competition, are the wrong strategic choices that lead to contradictory results, which is then reflected in the strategic performance of these companies. Therefore, a day manager must strategically manage his facility, as he can no longer

make decisions in light of strict rules, historical policies or just a simple extrapolation of current events. However, he must have a vision for exploring future events when planning organizational goals and developing and designing strategic policies. Moreover, he must go beyond the limits of specialized job experience in the fields of production, marketing, finance, etc., so that he can see the full picture of the facility. Nevertheless, at the same time, many of the institutions that failed to survive as a result of the successive losses they incurred and the decline of their positions in the market, were not due to the lack of a strategy for their work, but because of the lack of communication with employees to implement these strategies. Many of the administrative systems that were developed in the past were dealing with a stable environment to a large extent, in contrast to the difficult present in which the competition between companies intensified. Therefore, today's companies urgently need a mechanism to implement strategies and develop ways of communicating with their employees. Where performance is based on the plans developed, which in turn emerge from the strategies of the organization, and this is the model provided by the balanced scorecard, which includes a variety of performance measures related to four areas: financial performance, customer relations, internal processes, and learning and growth systems in the organization.

These criteria that are included in the balanced scorecard model are derived from the company and its strategy. It focuses on what matters to customers, employees and investors. So, using this model leads to the rationalization of administrative decisions, by linking performance measures with the company's goals, strategies and activity units. The absolute value of the concept of using this model is achieved by making the employees of the facility from the top of the functional hierarchy to the bottom work in a coherent manner, by making the strategy the only driver for everyone by linking personal goals with the strategy and adopting the principle of cause and effect (Moghaddam, 2012). These factors can help reduce the problems facing the implementation of strategic measures represented in the gap between the planned and targeted strategy of activities and the strategy that is already applied, as reducing this gap requires finding appropriate strategic measures at various levels.

The balanced scorecard is a convenient performance measurement template that includes a combination of strategic financial and non-financial metrics. The balanced scorecard differs from strategic measurement systems in that it includes the output measures and performance drivers for these outputs and are linked together in a chain of causal relationships (Kaplan and Norton, 1992). However, the basis for designing this model is that financial and non-financial measures should be part of the information system at various managerial levels. This model is based on the concept of strategy, indicating that the formation of a competitive strategy requires linking the organization with the competing forces in the industry it follows and at the same time affirming the interests of customers and shareholders (Atkinson et al., 1997).

Several companies that have implemented the balanced scorecard model to develop performance measurement systems have achieved tangible results. The application of these concepts has resulted in clarity, consistency of opinion and a focus on development in desired performance. Recently, some companies have used this model as the basis for an effective and integrated system of strategic management. Suppose some adjustments are made to the balanced scorecard model.

In that case, it becomes an integrated system for measurement and strategic management, as it is appropriate to assess the financial implications of some aspects of this model, such as customer satisfaction or quality improvement. This evaluation may help in identifying the most profitable customers and products for the enterprise and identifying the inputs and processes that increase the cost of the products or services (El-Kholy, 2001). It is also necessary to relate the reward and incentive system to the performance appraisal results of its various aspects identified in the composite and balanced scorecard.

It is necessary to focus on non-financial performance measures and not only financial performance measures, and also to achieve integration between them to give a comprehensive picture of the company's performance in an integrated manner (Murazaqa, 2009). The balanced scorecard model is an administrative philosophy that achieves the strategic objectives of the company by evaluating its financial, operational and strategic performance, according to an integrated framework of financial and non-financial standards and in a balanced manner, so that it provides integrated information on the company's performance (Al-Saadi, 2008). Therefore, it is useful to study the impact of applying the balanced scorecard and its four aspects (financial, customer, internal operations, learning and growth) in measuring, evaluating and achieving strategic financial performance in Yemeni food industries companies.

2. Review of Literature and Research Gap

The study draws its roots from previous studies that reflect efforts in the field of research. Reviewing these studies and determining their methodologies, research techniques and results gives a justification for the theoretical framework of the researcher's study, and provides an opportunity to show what this study offers compared to previous studies. A review of the accounting literature dealing with balanced scorecard allows a distinction between two basic approaches to deal with this topic. The first approach focuses on the theoretical analysis of the concept and dimensions of the balanced scorecard and building measurement system models according to this model. The second approach tries to formulate the concepts and dimensions of the balanced scorecard as basic variables and conduct an applied study to test these variables.

Accordingly, the researcher in this section sought to review the literature related to the balanced scorecard according to the following axes:

Table (1): Summary of the literature review

Statement		Number of studies
(A): Theoretical studies		
1	kaplan and Norton Studies	7
2	Other theoretical studies	7
Summary of Theoretical Studies		**1.** The main concepts discussed were the balanced scorecard, financial and non-financial criteria, measurement and evaluation of strategic performance, strategic performance management, performance drivers, and strategic planning. **2.** The content and dimensions of the balanced scorecard vary according to the activity, size, purpose, and legal form of the company, since the balanced scorecard is a particular tool that is designed within the strategy of each organization. **3.** The Balanced Scorecard initially focused on measuring performance from a strategic perspective; then it evolved from strategic measurement to strategic control. **4.** Some studies have criticized the theoretical foundations upon which the balanced scorecard is based, such as the causal relationships between the balanced scorecard dimensions and their lack of relevance to the incentives and rewards system.
(B) Applied Studies		
1	Performance measurement	44
2	Financial Performance	28
3	Decision Making	11

Table (1) continued from previous page

4	Integrating balanced scorecard with MCDM techniques	14
5	Sustainability of balanced scorecard	14
Summary of Applied Studies		**1.** The majority of applied studies emphasized the importance of the balanced scorecard as a system for measuring and evaluating the performance of business organizations according to multiple dimensions. However, these studies also confirmed that financial indicators and metrics remain the most widely used in measuring and evaluating financial and strategic performance. **2.** The results differed in the correlation between non-financial measures and financial performance. While some studies have found no association between the use of non-financial metrics and improved performance. At the same time, a number of studies have confirmed the causal relationships between the balanced scorecard dimensions and long-term improvement in performance. **3.** It was found that organizing performance measures in a set of dimensions in the balanced scorecard positively affects employee satisfaction and also significantly affects the judgment of managers who evaluate performance in the case of consistency in the measures contained in the one dimension. **4.** The structure of the balanced scorecard, the number of its dimensions, and the required measurements for each dimension depend mainly on the strategy, size and nature of the organization's activity and the environment in which it operates. **5.** Some studies have extensively discussed the role of the balanced scorecard in achieving the sustainability of companies and institutions and their ability to achieve internal balance. **6.** Researchers have made several attempts to integrate the balanced scorecard with MCDM decision-making mechanisms to achieve an integrated approach through which financial performance can be measured and evaluated optimally.

Table (1) continued from previous page

The total number of studies	**125**

Research gap

As previously discussed in the “Literature Review" it was found that financial standards remain the primary basis for measuring and evaluating performance in both private and government organizations and companies. However, over the past decade and a half, managers in most companies have adopted the "Norton & Kaplan" method to incorporate other aspects and dimensions along with the financial perspective of measuring performance into its overall format. While in terms of measuring and evaluating financial performance, financial reports and statements are still the basis that financial managers and analysts use in reading the accuracy, sustainability and soundness of the financial position of the companies involved. In addition, the business sector in the Arab world in general and in the Republic of Yemen in particular still relies on old administrative methods in measuring and evaluating financial performance, hence the idea of adopting non-financial items (clients - financial - internal processes - learning and growth) as tools to measure Financial performance, the theory still requires a lot of testing and research. Accordingly, it appears clear that there is a research gap represented in the absence of similar studies discussing these issues in the business sector in Yemen. Hence, there is an attempt to bridge this gap by conducting a study on "Measuring and Evaluating Financial Performance through the Balanced Scorecard (BSC) for the Food Industry in Yemen".

3. Statement of the Problem

During the past decades, the Yemeni economy witnessed a series of successive developments that affected all economic sectors, especially the industrial sector. It contributed to the failure of many of its companies and their inability to continue. Perhaps the most important of these developments include:

1- Implementation of the policy of openness and the transition to market economies, and the adoption of many economic reform policies that contributed to the flow of new capital into the Yemeni market in the form of joint-stock companies or branches of foreign companies that brought changes in the pattern of production and consumption to the local market.

2- The privatization program adopted by the government, which led to the transformation of some public companies into private ownership and pushed them to develop their financial and economic performance and make the companies with a competitive advantage in the market.

3- Yemen's commitment to the GATT and economic cooperation agreements with the countries of the Gulf Cooperation Council (GCC) that flooded Yemen with products that are difficult for local products to compete with.

These developments necessitated the Yemeni industrial companies to modernize the manufacturing systems and production style on the one hand, and to adopt the methods developed

in management and accounting ideas on the other hand, at the forefront of which are methods of measuring and evaluating performance.

Hence, the study problem crystallized in studying the role of the balanced scorecard - as one of the modern performance measurement and evaluation models - in measuring and evaluating the financial and strategic performance of Yemeni food industries companies. The researcher chose Yemeni food industries companies in the private sector as an oasis for the field study due to the following considerations:

1- The Yemeni food industry companies have been able to go a long way in the industry; therefore, companies in this sector have a great industrial experience compared to other sector companies.

2 - The food industry sector in Yemen is considered one of the most prominent industries facing severe competition as a result of the openness of the Yemeni market to foreign products.

3- The contribution of the Yemeni food industries represents 48.9% of the total added value of the Yemeni manufacturing industries, and 29.8% of the added value of the national economy as a whole.

4- The homogeneity of the industries of this sector, and hence the possibility of generalizing the results that can be reached.

Through structured interviews conducted by the researcher with some directors and heads of departments in some Yemeni food industry companies on these dimensions, a set of negative aspects for measuring and evaluating the performance of these companies became apparent, the most important of which are:

1- Limiting the evaluation of operational performance without evaluating the strategic performance by focusing on some financial measures such as profitability, liquidity and turnover rates.

2- Neglecting the role that many parties play in the performance of these companies, such as clients, workers, and suppliers.

3- Neglecting continuous improvement and innovation processes when measuring and evaluating the performance of these companies.

4- Limiting the internal environment variables when carrying out the strategic planning process and neglecting the external environment variables, despite their impact on strategic performance.

5- The ineffectiveness of the performance measurement and evaluation systems in place in these companies due to the short-term focus of these systems and the absence of any link between them and the developed strategies.

6- Insufficient information systems exist to provide data and information about the various aspects of corporate performance.

7- The lack of a liability accounting system on a strategic basis, and most companies being satisfied with defining responsibilities based on organizational units and individuals.

8- Those in charge of Yemeni food industries do not have sufficient awareness and understanding of the concept of the balanced scorecard and its role in measuring and evaluating strategic performance.

In light of the negatives revealed by the initial survey, the research problem can be formulated in the following set of questions:

1- Does the relative importance of the direction of balanced scorecard' elements associated with factors affecting performance measurement and evaluation among respondents differ? What is the relative importance of the elements of performance management in these companies?

2- Does the application of non-financial performance measures (customers, internal operations, learning and growth) affect the achievement of the strategic financial performance of Yemeni food industry companies?

3- Does the application of performance measures within balanced scorecard dimensions affect the rationalization of earning management performance in Yemeni food companies?

4- Does the application of the balanced scorecard model as an integrated performance system help achieve objectivity in decision-making and thus improve financial performance in Yemeni food companies?

4. Objectives of the Study

The study aims to test the extent of the commitment of Yemeni food industries companies to measure and evaluate financial performance according to the balanced scorecard' dimensions. In light of this objective, the following sub-objectives were formulated:

1- Knowing the extent of applying the balanced scorecard by the companies under study.

2- Knowing the extent of awareness of individuals in the Yemeni food industry sector of the importance and effectiveness of the balanced scorecard model.

3- Study and analyze the direction of the relative importance of the elements related to the factors affecting the measurement and evaluation of performance from the balanced scorecard' perspective in Yemeni food industry companies.

4- Study the effect of applying non-financial performance measures (customers, international operations, learning & growth) on achieving the strategic financial performance of Yemeni food industry companies.

5- Study the effect of applying performance measures within the balanced scorecard' dimensions on rationalizing the performance of earning management in Yemeni food companies.

6- Study the effect of applying the balanced scorecard model as an integrated performance system to achieve the objectivity in decision-making and thus, improve the financial performance of Yemeni food companies.

5. Hypotheses of the Study

1. H_1 - The relative significance of the direction of Balanced scorecard' elements associated with factors affecting performance measurement and evaluation among respondents is not different.

2. H_2 . There is no statistically significant effect of applying non-financial performance measures according to the balanced scorecard perspective (customer, internal processes and learning & growth) on achieving the strategic financial performance of Yemeni food companies.

3. $H_{2.1}$ - There is no statistically significant effect of applying performance measures within the customer dimension in achieving strategic financial performance of Yemeni food companies.

4. $H_{2.2}$ - There is no statistically significant effect of applying performance measures within the internal processes dimension in achieving strategic financial performance of Yemeni food companies.

5. $H_{2.3}$ - There is no statistically significant effect of applying performance measures within the learning & growth dimension in achieving strategic financial performance of Yemeni food companies.

6. H_3 - There is no statistically significant relationship between the application of performance measures within the balanced scorecard dimensions and the rationalization of earnings management performance in Yemeni food companies.

7. H_4 - There is no statistically significant effect of applying the balanced scorecard model as an integrated performance system to the objectivity in decision-making to improve financial performance in Yemeni food companies.

6. Importance of the study

The importance of the study stems from the scientific and practical contributions that add to the research field, which can be presented as follows:

(A) Scientific importance:

The scientific importance of the study can be crystallized as follows:

1 - This study deals with one of the important and recent topics in accounting and administrative thought related to the strategic performance of organizations, which is the subject of the balanced scorecard. It is a model that measures and evaluates performance based on a balanced set of financial and non-financial indicators from a strategic perspective.

2 - Despite the multiplicity of studies that were subject to the topic of balanced scorecard in developed countries, the Arab library, in general, still suffering from a clear deficiency in those studies. As the researcher did not monitor but one study discussing this topic in the Yemeni business environment. This makes this study a new addition that benefits scholars, researchers and teaching staff in the field of managerial accounting and performance evaluation.

3- This study is considered as an open intellectual invitation for academics and researchers to take an interest in taking new dimensions, visions and thought to evaluate performance instead of focusing on financial measures and indicators that are not sufficient in the modern business environment.

(B) Practical importance:

The following points evidence the practical importance of this study:

1- This study, by presenting the foundations and principles of the balanced scorecard as a modern management and accounting approach, is one of the first attempts to address this topic from both theoretical and practical perspectives in the Yemeni business environment, and thus contributes to enriching practical practices that help leaders and workers in Yemeni food industries to recognize the balanced scorecard and motivate them to adapt it to the reality of their organizations.

2- The results of this study constitute a guide that helps the administrative leaders in Yemeni food industries companies to identify the factors affecting the measurement and evaluation of financial and strategic performance especially that within the limits of the researcher's knowledge there is no previous field study specialized in identifying these factors.

3- Such studies provide a modern approach that contributes to the formation of strong, advanced organizations capable of making decisions using specific standard indicators that enable them to respond to the rapid and complex changes that these companies face.

7. Working Definition of the Terms

1. Balanced Scorecard

A balanced scorecard is a strategic management performance metric used to identify and improve various internal business functions and their resulting external outcomes. Balanced scorecards are used to measure and provide feedback to organizations.

2. Financial dimension

Financial data, such as sales, expenditures, and income are used to understand financial performance.

3. Learning and growth

Learning and growth are analyzed through the investigation of training and knowledge resources. This first leg handles how well information is captured and how effectively employees use the information to convert it to a competitive advantage over the industry.

4. Customer dimension

Customer perspectives are collected to gauge customer satisfaction with quality, price, and availability of products or services. Customers provide feedback about their satisfaction with current products.

5. Strategic performance management

A business function where business owners and managers develop activities or tasks to gauge the overall effectiveness and efficiency of their company.

6. Strategic map

A diagram that is used to document the primary strategic goals being pursued by an organization or management team.

7. Cause and effect relationship

A relationship between events or things, where one is the result of the other or others. This is a combination of action and reaction.

8. Key Performance Indicators (KPIs)

A set of quantifiable measurements used to gauge a company's overall long-term performance.

9. Economic value added (EVA).

A measure of a company's financial performance based on the residual wealth calculated by deducting its cost of capital from its operating profit, adjusted for taxes on a cash basis.

8. Research Methodology

The balanced scorecard works on two main functions. The first is to implement the strategy of the company by defining the objectives of the company and its performance measures in light of both its vision and strategy. The second focuses on achieving a balance between several measurements that reflect different dimensions so that the entity can track both short-term financial results and other long-term performance indicators. Thus balanced scorecard plays an essential role in measuring and evaluating performance from a balanced perspective. Thus, this chapter examines the factors, determinants, and variables governing the various aspects of the balanced scorecard on a sample of companies of the food industry in the Republic of Yemen.

This chapter discusses the road-map that the researcher has followed to achieve the objectives set for the study. The methodology of the study presents the population and sample of the study, the variables, the methods of measurement, the proposed model of the study, the design of the study tool, and the statistical methods used.

The research approach is generally composed of three elements: the research portal, the research tools, and the research method. The input of this research is based on a normative or deductive basis. Where this research draws the normative character from the objectives that it seeks to achieve, which is what the four-track measurement model should be, Including the procedural

steps leading to what must be the various measurements descriptive, quantitative, financial sought by this model.

The method of research depends on the descriptive-analytical approach, which relies on the study of the phenomenon as it exists in reality; it is also concerned to describe it accurately and objectively, gave it a qualitative and quantitative expression. The qualitative expression describes the phenomenon and explains its characteristics. In contrast, the quantitative expression gives us a numerical description of the extent or size of this phenomenon and its degrees of association with other phenomena. Also, the descriptive analytical approach is consistent with the nature of the problem studied, which sheds light on its various aspects by means of narration and focused analysis, deep understanding of its circumstances, and the collection of information that further clarifies its different dimensions.

8.1 Sources of information and data collection methods

8.1.1 Secondary sources:

The general framework of the study was formed by relying on secondary data sources, which are books, references, periodicals, articles, research and previous studies that dealt with the subject of study, in addition to various Internet sites and related conferences during the research period.

8.1.2 Primary data

A- To address the study subject's analytical aspects, the primary data collection was based on the questionnaire as the main tool designed specifically for this purpose. It was distributed to all the target group members.

B- The researcher conducted a survey using some phone calls and sent some inquiries via e-mail and social media to individuals working in the relevant job centers.

9. Research Design

9.1 Population of the study

The study population consists of large private companies operating in the food sector in the Republic of Yemen, where the number of companies operating in this sector reached 256

companies according to the industrial register of the Ministry of Industry and Trade. These companies are divided in terms of capital invested into three categories:

(i) Large companies: those companies whose capital invested exceeds YR 400 million.

(ii) Medium companies: those companies with an invested capital of 200-400 million YR.

(iii) Small companies: those companies with a capital of less than 200 million YR.

The researcher excluded from this study the medium and small size companies for the following reasons:

1- The modest potential of these companies, both in terms of capital invested or in employment and market share.

2- Lack of clear strategies and operational plans for these companies.

3- Lack of organizational structure or administrative and accounting information systems in these companies.

4 - Most of these units are large factories more than companies or food industries.

5 - Lack of required expertise and the appropriate environment to implement the balanced scorecard in these companies.

Thus, the study population consists of the heads of the Board of Directors, Executives and Chief Financial Officers, heads of the accounting, marketing, sales, personnel, and production departments of large companies in the private sector food industries in the Republic of Yemen.

9.2 Sample selection

Due to the nature of the study, according to the requirements of the application of Balanced Scorecard, the researcher chose large companies operating in the food sector only, according to the classification of the Ministry of Industry and Trade, along with the General Authority for Investment, the large companies are classified based on the following criteria:

1. The number of employees in these companies exceeds 100 workers and employees.

2. The invested capital shall not be less than 400 million YR.

3. The total assets of these companies shall not be less than 200 million YR.

According to these determinants, the selected number of companies is 44 private companies operating in Yemen's food sector.

Since the implementation of the balanced scorecard requires the formation and selection of a team within specific criteria, such as (Arveson, 2007: 19):

1. The members of the working team should be from all levels of management in those companies.

2. The working team shall include all departments related to the balanced scorecard aspects.

3. The team members should be experts in internal operations, enabling them to accomplish this task.

Accordingly, the sample of the study has a total of 396 employees, which consists of the chairmen, the executive directors, the financial managers, the account managers, Chief Operating Officer or their representatives, as well as the heads of the production, marketing, and human resources departments and Research and Development. Due to the limited population, the researcher has adopted the census method to distribute the questionnaire forms and collection of data needed to achieve the research purposes. The following table shows the metadata of the total distributed forms as well as the respondents according to the target job positions:

Table (2): Questionnaires administration

Statements	Numbers	Rate
Number of questionnaires distributed	396	100%
Retrieved questionnaires	371	93.6%
Non-retrieved questionnaires	25	6.4%
Invalid questionnaires (Damaged)	8	2.2%
Total of valid questionnaires subject to analysis	363	91.4%
Job title	No. Of returned forms by job position	Rate
Chairman of Board of Directors	38	10.6%
Chief Executive Officer (CEO)	41	11.3%

Table (2) continued from previous page

Chief Financial Officer (CFO)	**42**	**11.4%**
Chief Operating Officer (COO)	**37**	**10.2%**
Chief Accounting Officers (CAOs)	**42**	**11.4%**
Production manager	**42**	**11.4%**
Human resource manager	**44**	**12.3%**
Research and development manager	**39**	**10.8%**
Marketing and sales manager	**38**	**10.6%**

Source: Researcher, field survey

9.3 Study model

The study model was designed in proportion to the presented variables in light of the re-research problem and its hypotheses. The following form illustrates the proposed model for the study:

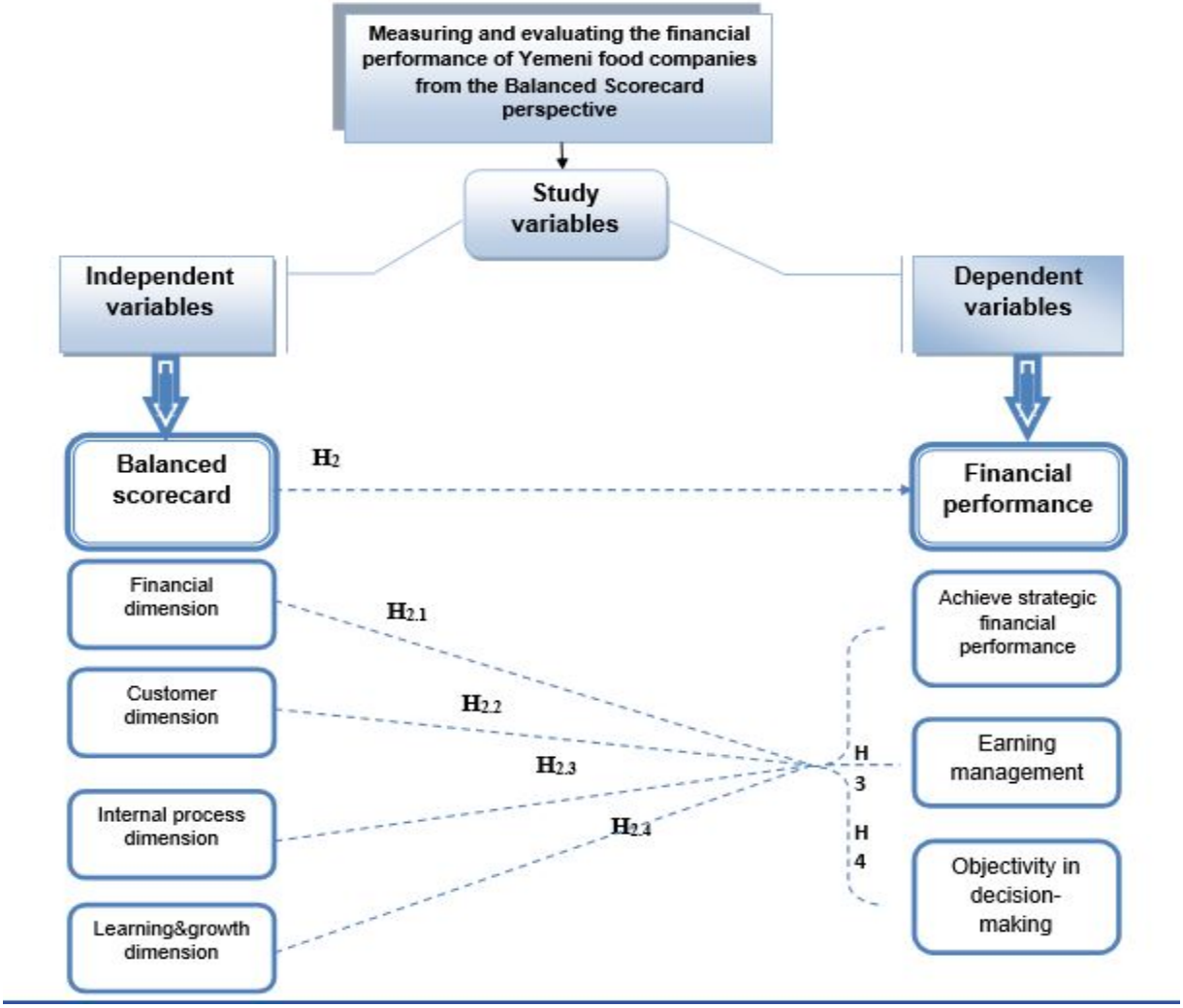

Figure (1): Proposed model and study variables

10. Statistical techniques and tools

To achieve the research goals and test the hypotheses, the researcher relied on the following set of statistical tools using the Social Sciences Statistical Package SPSS V.26 program.

1. Pearson correlation coefficient to calculate the internal consistency between the score of each axis and the correlation coefficient to determine how the axes relate to the test's general level.

2. Spearman correlation coefficient to examine the structural validity of the content and the validity of the criterion to determine to what extent each axis in the study relates to the questionnaire's overall result.

3. Cronbach's Alpha Coefficient to measure the reliability of the distributed questionnaire.

4. Descriptive statistics to display the demographic characteristics of the research sample, where absolute frequencies and relative weights were used, and the averages and standard deviations.

5. Kolmogorov-Smirnov- to test the normal distribution of data.

6. Homogeneity of Variance and random error.

7. Collinearity Diagnostics to study the linear interconnection problem.

8. F-fisher distribution for multiple regression suitability tests.

9. Simple linear regression.

10. Multiple linear regression.

11. Miller model for earnings management disclosure.

12. Spearman correlation coefficient.

11. Chapter Scheme

This research work is presented in six chapters:

The first chapter deals with explaining the study problem, its objectives and importance, the study hypotheses, and the difficulties that the researcher faced during the research.

The second chapter deals with reviewing the literature related to the study subject, whether applied or theoretical.

The third chapter is concerned with consolidating the theoretical frameworks of the balanced scorecard and related topics.

The fourth chapter discusses the roadmap taken by the researcher to achieve the objectives of the study. The study methodology presents the study population and sample, variables, measurement methods, the proposed study model, the study tool's design, and the statistical methods used.

The fifth chapter contains a clear description of the data collected, data analysis, and data interpretation.

The sixth chapter summarizes findings, suggestions, areas for future research, and the conclusion.

12. Major Findings of the Study

This chapter presents the findings, suggestions, and conclusion of the study and the research's important features. Also, the study provides scope for further research into the area which is duly presented hereunder

12.1 Profile analysis of respondents

- The sample members' demographic characteristics varied in terms of scientific qualification, specialization, career status, number of years of practical experience, and work nature.

- The study showed that most of the sample members were males. The researcher attributed that to the targeted study sample was from managers and heads of departments. This group was often males. These differences in numbers between males and females may be attributed to the predominance of male leadership positions in some cultural concepts prevailing in Yemeni society.

- It was observed that most of the sample members belong to the age group (30-40). The predominant ratio is a young and expert and able to give, which indicates the sensitivity of the decisions taken and wise vision. All this crystallizes in the reliability of the data obtained from the sample study.

- Most of the sample individuals are bachelor's and master's degrees holders, which constitute 90.4% of the sample, which is a substantial percentage. It represents the category that bears the burden of performing various operations in companies. Thus, the researcher assured the majority's ability to understand and answer the questionnaire questions, and the high scientific level is a positive indicator of the respondents' abilities and efficiency.

- The field survey showed that individuals with scientific specialties in administration and accounting represent the majority of the total sample, followed by finance and banking sciences. Here, it must be noted that the disciplines of management and accounting constitute the central nerve among the sciences necessary for workers in industrial companies of all kinds. Also, we should not overlook the need for some employees to enjoy other types of sciences closely related to administrative work, as an inevitable result of the intertwining of contemporary sciences.

- Most of the sample members are department heads, representing the middle administration. Of course, they can implement the general goals and draw up the strategic plans, followed by senior management personnel represented by the general managers, chief executives, financial managers, and operations. Moreover, this is logical and necessary in applying the balanced scorecard model that all administrative levels participate in the balanced scorecard preparation. Suppose this model is to succeed and work efficiently and effectively. However, in our local environment, as in many other settings, leadership plays a crucial role in adopting new trends and implementing them while reaffirming that all should participate in working towards achieving the overall strategic objectives.

- Respondents have sufficient years of experience ranging between 6-15 years; in addition to 16% of the total sample who have a long working experience may exceed 15 years. These years of experience play a key role in shaping workers' information backgrounds in all enterprises. Moreover, that is a crucial benefit to the industry workers because they have a significant impact on raising awareness and understanding of the current work details. Moreover, how to act in the face of emergency conditions, whether positive or negative. For practical experience to be more efficient and effective, scientific specialization must be accompanied by a person's desire to learn more about the modern sciences relevant to life and work.

Table (3): Demographic Characterization of Study Respondents (n = 363)

Demographics	Characteristic	Percentage
Gender Group	Male	93.3
	Female	6.7
Age Group	20-29 Years	7.8
	30-39 Years	52.8
	More than 40	39.4
Educational Group	Diploma	2.8
	Bachelor	68.6
	Master	21.8
	Ph.D.	5.9
	Other	0.8
Specialization	Management	32.8
	Accounting	41.5
	Economics	6.4
	Banking and Financial science	13.4
	Other	5.9
Profession group	Chairman of Board of Directors	10.6
	Chief Executive Officer (CEO)	11.3
	Chief Financial Officer (CFO)	11.4
	Chief Operating Officer (COO)	10.2
	Chief Accounting Officers (CAOs)	11.4
	Production manager	11.4
	Human resource manager	12.3

Table (3) continued from previous page

	Research and development manager	**10.8**
	Marketing and sales manager	10.6
Experience Group	less than 5 years	8.8
	from 6 – 10 years	46.6
	from 11 – 15 years	28.5
	more than 15 years	16.1

Source: Field Survey

12.2 The extent of implementing the balanced scorecard

- Most of the companies under study (Yemeni food companies) have systems for measuring and evaluating performance, some of which rely on modern systems such as BSC and TQM. Moreover, most of these companies take the measurement systems used as a means of compensating and rewarding individuals, indicating the involvement of individuals in the evaluation process and their awareness of performance indicators and standards.

- The companies concerned in the study are ideal for achieving the study's objectives because these companies have clear insights, business strategies, and integrated information systems. These companies also represent an appropriate platform for the implementation and development of the balanced scorecard model.

- Financial and non-financial indicators together represent the most critical measurement and evaluation engines in Yemeni food companies. Followed by the engine of financial indicators. In contrast, non-financial data are the lowest measurement and evaluation engines used by the firms in question.

Customer perspective is the most commonly used indicator within balanced scorecard contents even by the companies that do not apply this model, followed by the internal operations indicator used to measure and assess Yemeni food companies' performance.

Learning and growth perspective is the least used indicator in this sector's measurement and evaluation process.

- Only 36.4% of the total study population applies a "literally" balanced scorecard model. At the same time, there is a partial BSC application either by those who claim to adopt BSC or do not.

- There is a reasonably appropriate level of awareness about the balanced scorecard and its dimensions, characteristics, and concepts. However, Yemeni food companies still have a lot of efforts to reach an adequate level of awareness to work hand in hand with all individuals within the organization to apply the balanced scorecard appropriately.

- Most Yemeni food companies (under-study) face difficulties in successfully implementing the balanced scorecard and achieving the original and desired goals. This may be due to the failure to agree on a sufficient number of measures or to choose performance measures that are not suitable for the establishment's nature, failure to act on metrics data. And not to be free from the dominance of physical standards. Moreover, to consider the balanced scorecard as a (product) rather than a production process. Alternatively, because of the failure to link the concept of balanced measurement to the strategic plan (Abbas, 2019). And the lack of awareness of the relationship between BSC and the organization's culture and the weak role of senior management: (through its conviction, support, and commitment to model implementation). And it has limited information systems in the organization. Typical outreach efforts among staff are typical of the model, and failure to deal adequately with those who resist the BSC within (and possibly outside) the facility (Alward, 2010). In contrast, some food companies in the other part of the sample succeeded in implementing a balanced scorecard, which opens the way for other companies to benefit from the experiences of these companies and avoid mistakes and try to adapt to difficulties and obstacles, and work on clarifying the objectives based on a clear strategic vision, and the provision of competencies and specialists in the balanced scorecard.

- Through the foregoing, we see that the Yemeni food companies have taken the first steps in adopting the balanced scorecard despite some failure manifestations. However, some of them were eventually able to successfully implement this model, while others have applied some aspects of the balanced scorecard and touched some of its benefits.

Table (4): The extent of implementing the balanced scorecard

N	Variables	Positive responses			Negative responses			Total
		No. of companies	F	P	No. of companies	F	P	
Evaluation of the performance measurement mechanism								
1	The company has a performance measurement and evaluation system	**41**	**342**	**94.2**	**3**	**21**	**5.8**	**363** **100%**
2	Does the company implement the total quality management (TQM) system?	**31**	**256**	**70.5**	**13**	**107**	**29.5**	**363** **100%**
3	Does the company use a performance measurement system to compensate or reward some or all of the unit's employees?	**33**	**273**	**75.2**	**11**	**90**	**24.8**	**363** **100%**
4	Does the company apply the Balanced Scorecard model?	**19**	**157**	**43.3**	**25**	**206**	**56.7**	**363** **100%**
5	Is the Balanced Scorecard applied in the current production process?	**19**	**156**	**43**	**25**	**207**	**57**	**363** **100%**
Performance measurement and evaluation engines								
1	The company relies on financial indicators only in evaluating and measuring performance	**18**	**149**	**41.1**	**26**	**214**	**58.9**	**363** **100%**
2	The company relies on non-financial indicators only to evaluate and measure performance	**2**	**17**	**4.7**	**42**	**346**	**95.3**	**363** **100%**
3	The Company uses both financial and non-financial indicators to assess and measure performance	**24**	**198**	**54.6**	**20**	**165**	**45.4**	**363** **100%**
The extent to which the balanced scorecard content is used								
1	Customer perspective	**25**	**206**	**56.8**	**19**	**157**	**43.2**	**363** **100%**
2	Internal processes perspective	**23**	**190**	**52.4**	**21**	**173**	**47.6**	**363** **100%**
3	Learning & Growth perspective	**16**	**132**	**36.4**	**28**	**231**	**63.6**	**363** **100%**
Degree of employee awareness of the characteristics and dimensions of the balanced scorecard								

Table (4) continued from previous page

1	Have you been trained on modern management accounting methods such as Balanced Scorecard (BSC), Activity Based Costs (ABC) and other methods?	**214**	**59**	**149**	**41**	**363** **100%**
2	Do you involve in decision-making within the company?	**265**	**73**	**98**	**27**	**363** **100%**
3	Do you have an idea of a Balanced Scorecard?	**301**	**82.9**	**62**	**17.1**	**363** **100%**
4	Do you understand all the terminology used in the balanced scorecard?	**146**	**40.2**	**217**	**59.8**	**363** **100%**
5	Are you aware of the organization's strategic vision and mission?	**289**	**79.6**	**74**	**20.4**	**363** **100%**
6	Is there a necessity to build a model to measure and evaluate the performance of the company using balanced scorecard?	**238**	**65.6**	**125**	**34.4**	**363** **100%**
7	Do you think having a clear vision and achievable goals will improve the company's financial performance and thus improve overall performance?	**340**	**93.7**	**23**	**6.3**	**363** **100%**
The level of success of adopting the balanced scorecard in the companies concerned						
1	Were the original goals of introducing the balanced scorecard met or exceeded?	**111**	**30.6**	**252**	**69.4**	**363** **100%**
2	Has the adoption of the balanced scorecard helped align key performance metrics with strategy and thus facilitate communication and understanding of business objectives and strategies at all levels of the organization?	**133**	**36.6**	**230**	**63.4**	**363** **100%**
3	Did the use of non-financial standards in the Balanced Scorecard improve the company's financial performance?	**276**	**76.0**	**87**	**24.0**	**363** **100%**

Source: Field Survey

12.3 Universal analysis

12.3.1 Analysis of balanced scorecard axes according to participants' responses

(A): Findings related to the financial perspective:

- Survival and growth indicator is the most acceptable among respondents.

- The return on capital employed indicator is the second indicator in terms of acceptance among respondents, as the ROCE gives a sense of the ability of the company to use its funds to produce returns by comparing the company's return on capital with the cost of capital.

- The gearing index and the indices of the reference analysis are the least accepted by the respondents.

- Key indicators within the financial perspective of the balanced scorecard are an important part of the performance measurement and evaluation system in Yemeni food companies.

- The financial indicators according to the financial perspective in the balanced scorecard, affect the financial performance in the Yemeni food companies.

(B): Findings related to the customer perspective:

- According to the respondents' responses to the study questions, performance indices that fall under the customer perspective affect the financial performance of the Yemeni food companies.

- The customer satisfaction indicator is the most acceptable among respondents and the most influential on sales and revenue movement and, therefore, on the organization's financial performance.

- Delivery measures are the second indicator in terms of acceptance within the Yemeni food companies (study sample) because of their impact on increasing customer satisfaction, maintaining existing customers and gaining new customers, thus maintaining its reputation and obtaining competitive advantages.

- The quality control measures are the least acceptable among the key performance indicators in this investigation and, therefore, less impact the companies' financial performance under study.

- Key indicators under the customer perspective of the balanced scorecard are an essential part of the performance measurement and evaluation system in Yemeni food companies.

(C): Findings related to the internal processes perspective:

- Inventory control measures are the most reliable performance indicators under the perspective of internal operations, followed by material control indicators.

- Yemeni food companies adopt the internal operations indicators in the process of measuring and evaluating performance, and inevitably these indicators affect financial performance in the companies concerned.

- Production and marketing capacity utilization and recycling of defective products are the lowest indicators of internal operations used in Yemeni food companies.

(D): Findings related to the learning and growth perspective:

- Individual development measures are the most accepted measures of learning & growth perspective among the respondents.

- Product comparison measures against the products of the best competitors come second in measures of learning and growth. And this indicates that companies under study attach great importance to their competitors and seek to maximize their market share and preserve the interests of current shareholders and customers. Moreover, aiming to provide competitive and high-quality products, because comparison with the best products of competitors enables them to provide distinctive products that satisfy their customers, improve market value, and give a longer product life cycle.

- Automation efficiency measures are also an important measure of learning & growth perspective in the companies under study, and this indicates the high degree of awareness among employees about production technology, given that the companies under study have modern infrastructure.

- Patents registered indicator is the least acceptable among respondents, and this indicates a lack of interest in research and development, motivating individuals towards competition and creativity, and just depending on ready alternatives.

12.3.2 Summary of selected key indicators for the dimensions of the balanced scorecard

Table (5): Performance indicators according to balanced scorecard dimensions

N	Financial	N	Customer	N	Internal processes	N	Learning & growth
1	Survival and growth	1	Customer satisfaction	1	Inventory control measures	1	Individual development measures
2	Return on capital employed (ROCE)	2	Delivery metrics	2	Material control measures	2	Comparing the product performance with products of the best competitors
3	Return on equity (ROE)	3	Customer retention	3	Unit product cost	3	Automation efficiency measures
4	Shareholder wealth maximization	4	Sales Growth Rate	4	Cost reduction measures	4	The technological level of the company
5	Profit margin	5	Sales returns rate	5	Production cycle time	5	Manufacturing flexibility
6	Assets turnover	6	Customer turnover	6	Rate of introducing new products every year	6	Research and development
7	Inventory holding period (inventory turnover)	7	Servqual	7	Rate of defective product recycle	7	Number of patents registered
8	EBITDA(Earnings before interest, tax, depreciation, and amortization)	8	Quality control metrics	8	Production and marketing capacity utilization ratio		
9	Current ratio			9	The extent of adopting preventive maintenance programs		

Table (5) continued from previous page

10	Receivables (debtors) collection period						
11	Payables (creditor) period						
12	Quick ratio (Acid test)						
13	Gearing ratio						
14	Reference analysis indicators						

Source: Field Survey

Table (6): Arithmetic averages, standard deviations, and relative weights for applying balanced scorecard dimensions

Dimensions	Number of KPIs	Total score	MV	SD	RW
Financial	**14**	**55**	**53.05**	**13.135**	**96.5**
Customer	**8**	**61**	**33.17**	**6.121**	**54.4**
Internal processes	**9**	**58**	**36.75**	**7.111**	**63.4**
Learning & growth	**7**	**55**	**28.33**	**5.269**	**51.5**
BSC	**38**	**229**	**151.3**	**31.636**	**66.6**

Source: field survey Note: MV, SD and RW denote mean value, standard deviation and relative weight

The results in the table (6) showed that the mean overall score for the balanced scorecard (BSC) dimensions is 151.3, with a standard deviation of 31,636, and this indicates that the attitudes of the sample individuals regarding the application of the four performance measures are positive. Since the balanced scorecard (BSC) has four aspects, the financial dimension ranked first in terms of importance and relative weight with 96.5%. In contrast, the internal operations dimension ranked second with a relative weight of 63.4%. The customer dimension ranked third with a relative weight of 54.4%; finally, the learning and growth dimension ranks fourth and last with a relative weight of 51.5%. This pointing that the balanced scorecard dimensions are applied to a reasonably good degree, as the relative weights of BSC ranged between (96.5% - 51.5%).

This result is consistent with the previous studies such as (Adeeb, 2008), which exhibit that the balanced scorecard model has become widely used in most Yemeni industrial companies.

This demonstrates the interest of Yemeni industrial units in applying the balanced scorecard model to evaluate performance and keeping pace with modern management accounting methods so that the companies can maintain its presence and provide its services and products to customers in the best possible way.

12.3.3 Findings related to the strategic financial performance variable

The strategic financial performance consists of several critical dimensions that together constitute strategic goals that food industry companies seek to achieve, and the analysis and statistical interpretation of these measures have resulted in the following:

Increasing the operating profit margin: This dimension ranked first, and this indicates its importance for the industrial companies under study as a whole, and as a general and strategic goal that they seek to achieve on the ground.

- Continuity of process improvement: this dimension of strategic financial performance gained wide acceptance among the respondents, which indicates the utmost importance of continuous improvement processes.

- Optimal use of assets: one of the things that indicate the efficiency and effectiveness of a company is its ability to use minimal financial and non-financial resources to produce the top-quality products that generate the highest value. This dimension of the strategic financial performance has received considerable support from the sample members, which indicates the utmost importance of the issue of optimal use of assets.

-The measures to enhance and maintain effectiveness, efficiency and change in capital structure policy has obtained the same degree of acceptance among respondents. The higher these ratios indicate the level of success achieved by the facility. One of the recent expressions related to progress and penetration in the markets and the ability to compete in the term generating value. The ultimate goal of this expression is to create the maximum possible value from the available level of resources, which leads to maximizing the value of the company (El-hindawy and Alamasi.2014). Besides, making continuous and appropriate changes in the capital structure are indicators of the creative management's ability to manage the company and its predictive capabilities in the assumed future conditions. And that inevitably enables it to see the hidden links between the components of resource costs, so that the best possible equations are chosen to reach the financing structures that have the least. Feasible, cost-effective, and enable maximum benefit

(Husman and Dameji, 2015). This means the ability to achieve balance in the capital structure, provide the capabilities to maximize the market value of the company, and obtain the largest market share equivalent to the current level of capacity in organizational resources. It also means success in the field—competition and achieving general goals.

- The balance between future financial return and risk, achieving and maintaining competitive advantage; These measures were highly accepted among the sample members in the companies under study. The high ratios of understanding these measures indicate the effectiveness and efficiency of creative management. Furthermore, its ability to define future levels of risk and its possibilities and the ability to accurately identify the effects of this risk on the current values of resources and assets. All of which is an indication of the correctness of organizational behavior and decision-making mechanisms that successful management performs it.

12.3.4 The role of performance measures within the BSC dimensions in rationalizing Earnings management performance

By analyzing the data obtained, we found that respondents in the study sample agree that there are some earnings management practices. The study showed that respondents have a degree of awareness about earnings management practices, as well as the role of a balanced scorecard in limiting these practices that may be unethical even If it was in the interest of the organization. Because following these practices may lead to a loss of investors and shareholders confidence and may lead to the collapse and liquidation of the company, it is therefore wise to use the balanced scorecard model to limit these practices.

12.3.5 The ability of the balanced scorecard to achieve objectivity in the decision-making process

All study participants agree that the balanced scorecard helps managers to make more objective, efficient and effective decisions, which inevitably affects the financial performance of the companies under study. The study showed that the balanced scorecard also reduces the gap between actual and expected performance, and works to provide managers with information at the appropriate time. Moreover, the balanced scorecard assimilates the links between the company's performance measures, goals, procedures, plans and strategy clearly, which supports more objective and effective decisions.

12.4 Hypothesis testing findings

Hypothesis 1:

H1. "The relative significance of the direction of balanced scorecard' elements associated with factors affecting performance measurement and evaluation among respondents is not different".

This hypothesis tested the relative importance of the balanced scorecard elements trend related to factors affecting performance measurement and evaluation among respondents. To test this hypothesis, a set of statistical tools were used, such as frequency distribution, mean value, standard deviation, relative weight and rank values. The results were as shown in table (7):

Table (7): Summary of the hypothesis (1)

Hypothesis (1)	” The relative significance of the direction of balanced scorecard’ elements associated with factors affecting performance measurement and evaluation among respondents is not different”.
Dimension	**1. Performance measurement and evaluation engines**
Major findings	➢ A combination of financial and non-financial indicators is the most important engine for measuring and evaluating performance e in Yemeni food industries companies. ➢ The non-financial data are the least important drivers of performance measurement and evaluation In Yemeni food industries companies. ➢ The companies under study use a mixture of financial and non-financial indicators, which indicate that they are operating in an appropriate environment that may enable them to apply the balanced scorecard dimensions in measuring and evaluating performance.
Dimension	**2. Financial performance analysis indicators (financial dimension)**

Table (7) continued from previous page

Major findings	➢ The survival and growth, return on working capital and return on equity are the most financial indicators able to judge the financial performance in Yemeni food industry companies. ➢ The least important indicators of financial analysis when assessing the performance of Yemeni food industry companies are the reference analysis indicators, Gearing ratio, and Quick ratio (Acid test).
Dimension	**3. Customer analysis indicators (customer dimension)**
Major findings	➢ The most critical indicators in judging the efficiency of the financial performance of Yemeni food industry companies from the customer' perspective are customer satisfaction, delivery metrics, customer retention, sales growth rate. ➢ The least indicators able to judge the financial performance of Yemeni food industrial companies from the customer perspective are Quality control metrics, Servqual, Customer turnover, Sales returns rate.
Dimension	**4. Internal processes analysis indicators (Internal processes dimension)**
Major findings	➢ The most capable indicators for estimating the efficiency of internal operating activities in Yemeni food industry companies are inventory control measures, material control measures, unit product cost, cost reduction measures, and production cycle time. ➢ The least indicators able to judge the efficiency of internal operating activities in Yemeni food industry companies are the extent of adopting preventive maintenance programs, Production and marketing capacity utilization ratio, and the rate of recycling the defective products.
Dimension	**5. Learning and growth analysis indicators (Learning & growth dimension**

Table (7) continued from previous page

Major findings	➢ The most important indicators when assessing the financial performance of Yemeni food industry companies from a learning and growth perspective are individual development measures, comparing the product performance with products of the best competitors, automation efficiency measures, and the technological level of the company. ➢ The least important indicators when assessing the financial performance of Yemeni food industries companies from a learning and growth perspective are the number of patents registered, research and development Indicators, manufacturing flexibility.

Source: Field Survey

Based on the foregoing, the null hypothesis which states that; "**The relative significance of the direction of balanced scorecard' elements associated with factors affecting performance measurement and evaluation among respondents is not different**", is **rejected**, and accept the alternative hypothesis which states; "**The relative significance of the direction of balanced scorecard' elements associated with factors affecting performance measurement and evaluation among respondents is different**".

Hypothesis 2:

H2."There is no statistically significant effect of applying non-financial performance measures according to the balanced scorecard perspective (customer, internal processes and learning & growth) on achieving the strategic financial performance of Yemeni food companies".

To study this hypothesis, the researcher used the regression analysis method to prove the main hypothesis, by testing the sub-hypotheses, to study the effect of independent variables that represent the non-financial aspects of the balanced scorecard on achieving strategic financial performance in Yemeni food factories. Table (8) summarizes the results of the hypothesis and its sub-hypotheses.

Table (8): Summary of the main hypothesis (2) and sub-hypotheses

Particulars	Statement	Status
H2 **The main hypothesis**	There is no statistically significant effect of applying non-financial performance measures according to the balanced scorecard perspective (customer, internal processes and learning & growth) on achieving the strategic financial performance of Yemeni food companies	**Rejected**
Statistical tools	Multiple regression analysis	
Major findings	➢ There is a statistically significant effect of applying non-financial performance measures according to the balanced scorecard perspective (customer, internal processes and learning & growth) on achieving the strategic financial performance of Yemeni food companies. ➢ The null hypothesis is rejected, and the alternative hypothesis accepted	
H2.1 **Sub hypothesis (1)**	There is no statistically significant effect of applying performance measures within the customer dimension in achieving strategic financial performance of Yemeni food companies.	**Rejected**
Statistical tools	Simple regression analysis	
Major findings	➢ There is a positive and significant impact ($\alpha \leq 0.05$) of the customer dimension within the balanced scorecard on achieving strategic financial performance. ➢ The null hypothesis is rejected, and the alternative hypothesis accepted.	

Table (8) continued from previous page

H2.2 **Sub hypothesis (2)**	There is no statistically significant effect of applying performance measures within the internal processes dimension in achieving strategic financial performance of Yemeni food companies	**Rejected**
Statistical tools	Simple regression analysis	
Major findings	➢ There is a direct correlation between the variable of the internal processes dimension in the balanced scorecard and achieving strategic financial performance. ➢ The null hypothesis is rejected, and the alternative hypothesis accepted.	
H2.3 **Sub hypothesis (3)**	There is no statistically significant effect of applying performance measures within the learning & growth dimension in achieving strategic financial performance of Yemeni food companies.	**Rejected**
Statistical tools	Simple regression analysis	
Major findings	➢ There is a strong, direct and significant relation between the learning and growth perspective and achieving strategic financial performance. ➢ The null hypothesis is rejected, and the alternative hypothesis accepted.	

Source: Field Survey

Hypothesis 3:

H3."There is no statistically significant relationship between the application of performance measures within the balanced scorecard dimensions and the rationalization of earnings management performance in Yemeni food companies".

To test this hypothesis, first, it was necessary to reveal the extent of these companies' practice of earnings management, using Miller's model to reveal these practices. The necessary data were obtained by analyzing the financial statements of the companies under-study for the period between (2017-2018). The results were as follows:

- All industrial companies under study practice earnings management. This is consistent with the results of several studies that showed that either public or private industrial companies practice profit management. That management has great freedom to choose procedures, and this freedom provides them with the choice to apply the accounting procedures that lead to an increase in revenues.

- The departments of the industrial companies under study, practice profit management and that the managers of these units manipulating profits for different motives (market expectations, regulatory, contractual, political, tax reduction, etc.) regardless of the nature of these unit's activity and whether they are private or General.

- The studies also showed the importance of applying balanced scorecard model as a tool for monitoring and evaluating performance, as it works to reject the decisions made by managers that negatively affect the long-term of the company, and also works to achieve a balance between the decisions taken by management and the internal and external establishment operations and financial and non-financial indicators. Hence, the balanced scorecard model is expected to have an essential role in rationalizing earnings management by the companies under study as a tool for monitoring and evaluating performance and showing the performance of those companies to other parties (shareholders, customers, competitors, and the government).

- Likewise, because BSC role, it makes all workers from all levels of the organizational structure in economic units work in a balanced way by making the strategy the only driver for all by linking the personal goals of employees to the strategic objectives of the units, which reduces the managers' pursuit of their personal interests and manipulating profits.

- To test this hypothesis statistically, the main hypothesis was divided into sub-hypotheses according to the balanced scorecard perspectives, and then computed the Spearman correlation coefficient to study the relationship between the application of performance measures of the

balanced scorecard perspectives and rationalization the performance of earnings management in Yemeni food companies. The results are shown in the following table (9):

Table (9): Summary of the main hypothesis (3) and sub-hypotheses

Particulars	Statement	Status
H3	There is no statistically significant relationship between the application of performance measures within the balanced scorecard dimensions and the rationalization of earnings management performance in Yemeni food companies	**Rejected**
The main hypothesis		
Statistical tools	Spearman correlation coefficient	
Major findings	➢ There is an inverse relationship of statistical significance between the total correlation value of the balanced scorecard model and profit management. This shows that the greater the level of application of the balanced scorecard in the Yemeni food companies, whenever the practice of earnings management level decreased in these companies, and vice versa. ➢ The application of the balanced scorecard model achieves a great deal of balance between long-term and short-term decisions, determining the ability of managers to complete the procedures required to reach the desired goals, defining metrics in each dimension, and following up on their implementation. This may be a means of controlling the performance of managers and restricting their use of the flexibility available in accounting principles in proportion to their interests.	

Table (9) continued from previous page

H3.1 **Sub hypothesis (1)**	There is no statistically significant relationship between the application of performance measures of financial dimension and the rationalization of earnings management performance in Yemeni food companies	**Accepted**
Statistical tools	Spearman correlation coefficient	
Major findings	➢ There is no statistically significant relationship between the application of performance measures of the financial perspective of the balanced scorecard and earnings management. Thus, there is no effect of applying the measures of financial perspective on the profit management practices of the companies under study. The null hypothesis is rejected, and the alternative hypothesis accepted. ➢ The null hypothesis is accepted.	
H3.2 **Sub hypothesis (2)**	There is no statistically significant relationship between the application of performance measures of customer dimension and the rationalization of earnings management performance in Yemeni food companies	**Rejected**
Statistical tools	Spearman correlation coefficient	
Major findings	➢ There is a statistically significant inverse relationship between earnings management and the application of performance measures of customers perspective, and this indicates that the higher the level of application of customers' measures whenever this reduces the extent of earnings management and vice versa. The null hypothesis is rejected, and the alternative hypothesis accepted. ➢ The null hypothesis is rejected, and the alternative hypothesis accepted.	

Table (9) continued from previous page

H3.3 **Sub hypothesis (3)**	There is no statistically significant relationship between the application of performance measures of internal processes dimension and the rationalization of earnings management performance in Yemeni food companies	**Rejected**
Statistical tools	Spearman correlation coefficient	
Major findings	➢ There is a statistically significant inverse relationship between earnings management and the application of performance measures of internal processes perspective, and this indicates that the higher the level of application of Internal processes measures whenever this reduces the extent of earnings management and vice versa. ➢ The null hypothesis is rejected, and the alternative hypothesis accepted.	
H3.4 **Sub hypothesis (4)**	There is no statistically significant relationship between the application of performance measures of learning & growth dimension and the rationalization of earnings management performance in Yemeni food companies	**Rejected**
Statistical tools	Spearman correlation coefficient	
Major findings	➢ There is a statistically significant inverse relationship between earnings management and the application of performance measures of learning growth perspective, and this indicates that the high level of application of learning & growth measures whenever this reduces the extent of earnings management and vice versa. ➢ The null hypothesis is rejected, and the alternative hypothesis accepted.	

Source: Field Survey

Hypothesis 4:

H4."There is no statistically significant effect of applying the balanced scorecard model as an integrated performance system to the objectivity in decision-making to improve financial performance in Yemeni food companies".

This hypothesis tested the relationship between balanced scorecard perspectives and the objectivity in decision making in Yemeni food companies. To test this hypothesis, multiple regression analysis was used to study the effect of balanced scorecard perspectives on the total degree of the objectivity in decision making as an integrated system. And to know the relative importance of the balanced scorecard perspectives (financial, customer, internal processes, learning & growth) to achieve the objectivity in decision making. Accordingly, we concluded the following:

- There is an effect of independent variables (financial, customer, internal processes, learning & growth) on objectivity in decision-making, which indicates that the dimensions of the balanced scorecard explain 9.6 % of the variance or change in achieving objectivity in decision-making in Yemeni food companies.

- The customer dimension affects objectivity in decision-making by 19%, and this indicates that any increase in the independent variable (customer dimension) by one degree, in turn, will lead to an increase in the dependent variable (objectivity in decision-making) by 0.19, which is considered a statistically significant effect.

- As for other independent variables (financial, internal processes, learning & growth), we find that the value of the regression coefficients for these dimensions has reached respectively (0.014, 0.083, 0.068), meaning that their effect on the dependent variable is not significant. Thus, the independent variables (financial, internal processes, learning & growth) are not statistically significant, and their application within the balanced scorecard model does not positively affect the objectivity in decision-making (dependent variable).

- The Yemeni food companies take into account the customer's perspective to make more objective decisions more than relying on other dimensions within the balanced scorecard. And therefore, the null hypothesis (H0): "There is no statistically significant effect of applying the balanced scorecard model as an integrated performance system to the objectivity in decision-making to improve financial performance in Yemeni food companies" is **accepted**.

13. Suggestions of the study

In light of the results of the study, the researcher recommends the following:

1. The management of Yemeni food industry companies needs to pay attention to non-financial measures that reflect customer dimensions, internal processes, learning & growth when evaluating their performance as a basis for improving performance measurement and evaluation process from a non-financial perspective.

2. Companies should work to intensify training programs related to modern management techniques to measure and evaluate performance such as (BSC).

3. Companies must involve all individuals within the organization in the decision-making process according to administrative levels.

4. Ensure that everyone within the organization is aware of the objectives and strategic vision of the organization.

5. Companies should benefit from the experiences of companies that have succeeded in implementing the balanced scorecard, avoid mistakes, try to adapt to difficulties and provide competencies and specialists in the balanced scorecard.

6. Yemeni food companies should pay more attention to the quality of financial performance indicators used and link them to the strategic vision of the organization.

7. Yemeni food companies should focus on quality control measures and look for glitches and consider it seriously among the key indicators to measure performance implicitly with customer perspective indicators; because the quality is the magic code to maintain customers and attract more of them.

8. Food sector institutions in Yemen should pay more attention to the quality of performance indicators of the customer dimension and link them to the strategic vision of the organization.

9. Yemeni food companies must develop a system for measuring and evaluating performance based on their internal operations to increase the efficiency of operational and strategic performance.

10. Companies must pay attention to the quality of performance indicators for the internal operation dimension and link them to the strategic vision of the organization.

11. Companies should push individuals towards innovation, create a positive platform for competition, and pay attention to the incentive and reward system.

12. The need to urge Yemeni companies to rationalize the performance of earnings management due to its negative repercussions on the future of economic units in the long term and on the Yemeni economic development. Moreover, this calls for making all possible efforts to address and prevent these practices by taking into account the impact that can leave the use of measuring systems which are limited to the short-term financial perspective.

13. Conducting more research studying the relationship of the balanced scorecard in limiting earnings management and using models other than the Miller model used in this study to measure earnings management.

14. Companies must use the balanced scorecard as a management system and not as a system of measurement, which will enable them to push forward the administrative work and make more appropriate and objective decisions in a manner commensurate with the strategic vision, and to serve the stakeholders and management alike.

15. The need for Yemeni companies to seek to adopt balanced scorecard model and apply it in an integrated manner, as this model provides appropriate tools to measure strategic financial performance, as well as the necessity to work at the same time to create all the necessary conditions for its application if these institutions want to achieve their strategic financial performance.

16. Since the balanced scorecard model constitutes a tool for measurement and management, it is imperative that Yemeni industrial companies use it as a means of rationalizing managers' decisions, directing their behavior, and evaluating performance and incentives. By making use of its ability to help organize the administrative processes in the company, and focus on implementing the strategy.

17. The necessity of linking the Yemeni food industries sector with an information network and supporting communication systems in this sector to distribute the necessary information to measure and evaluate performance in order to strengthen the sector's competitiveness.

14. Scope for further research

- Continuing the future research, development and studies of the balanced scorecard model in other Yemeni industrial sectors and the service sector, in addition to discussing how to apply this model by governmental institutions, bodies and units.

- Examining the effect of integrating the balanced scorecard with the accounting and management systems used, especially the two systems of Activity-Based Costing (ABC) and Activity-Based Management (ABM) on measuring and evaluating performance.

- Examine the role of the business modelling approach (BMA) from a strategic perspective in activating the balanced scorecard.

- Examine the possibility of using the hierarchical analysis approach (AHP) in activating the strategic perspective of the balanced scorecard.

- Examine the role of balanced scorecard in enhancing corporate governance.

- Examine the use of the balanced scorecard in maximizing the synergies common to organizations with multiple investments.

15. Limitations of the Study

This study was limited to the following:

1- Measuring and evaluating financial performance based on the balanced scorecard and not other standard models used in measuring and evaluating performance.

2- An opinion poll of a sample of strategic managers, managers of financial departments, marketing departments, individuals and production, and not other Yemeni food industries departments.

3- This research was limited to food industry companies operating in the private sector only, not the public sector.

4- Analysis and interpretation based on the sample responses in the Yemeni food industry will not reflect the industrial sector as a whole.

5- The statistical numbers may differ from the different sources that were collected for the research, which led to a slight difference in responses, analysis and interpretation.

16. Conclusion

The food sector has become the predominant trend in developing the economy in Yemen. This sector will occupy a prominent position in Yemen by 2025, with the participation of many companies in this industry, intense competition in the market has become inevitable. Companies here predominately at a disadvantage in terms of services, prices and promotions. Large fluctuations in the economic and financial environment can make it challenging to profit or grow. Despite recent developments in performance measurement, corporate managers have constantly searched for a new effective measurement system to assess the performance of the organization. The balanced scorecard provides a framework for adopting multiple KPIs that complement traditional financial metrics with non-financial measures of customer satisfaction, internal processes, and learning and growth activities.

Companies initially adopted the balanced scorecard model for several reasons, such as clarifying and gaining consensus around strategy, focusing on organizational change initiatives, developing leadership capabilities, and getting coordination across many companies. In general, companies can achieve these target goals by developing the initially balanced scorecard. However, the evolution of the scorecard, and especially the methods among senior managers for setting goals, measures, and goals for the scorecard, ultimately reveals an opportunity to use BSC in a more widespread and holistic way than was originally intended.

The balanced scorecard is very popular all over the world and has proven by excellent results in several companies. Several organizations of Yemeni origin have tasted success with BSC's help. At the same time, several advisory groups provide services to facilitate the successful implementation of the BSC. Because previous performance measures focused on financial factors, they do not involve other important non-financial areas that need to be addressed.

The indicated results support the existence of links between the dimensions and their measures with the strategic choice of companies. Thus, the learning and growth dimension, the internal operations dimension, customer dimension, and financial dimension have a positive relationship with the balanced scorecard approach.

Yemeni food companies may also come up with their own formula for performance evaluation. This is absolutely essential not only for their survival but also for strong growth globally and facing competition for survival. The balanced scorecard is the need of the time; as such, every company should consider whether and when to opt for massive implementation.

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CONFIRMATION

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